





**RAMAN AMPLIFIED OPTICAL SYSTEM WITH REDUCTION OF FOUR-WAVE MIXING EFFECTS**

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**Abstract of CA2335891**

A transmission fiber for use in a Raman amplified optical communication system is formed to exhibit certain characteristics that limit modulation instability and four-wave mixing in the amplification region, thus reducing the noise component present in the transmission system. In particular, the group-velocity dispersion (denoted as D and measured in terms of ps/nm-km) is restricted to be either non-positive or greater than +1.5ps/nm-km in the pump wavelength range of interest (a typical pump wavelength range being 1430-1465nm). Preferably, the magnitude of the dispersion is kept below a value of 10 ps/nm-km in the signal wavelength range of interest (e.g., the "C" band or "L" band). Four-wave mixing is reduced by ensuring that the zero - dispersion frequency of the transmission fiber is not centered between the pump frequency and a frequency experiencing Raman gain.

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